

REMARKS

In the Office Action, the Examiner rejected claims 1, 2, 4, 8, 11-14, 16, 19, 20, and 22-34. By the present Response, Applicants have amended claims 1, 8, 16, 22, 24, and 26 for clarification of certain recited features in order to expedite allowance.

Applicants have also canceled claims 14 and 34 without prejudice. The above amendments do not add any new matter. In view of the foregoing amendments and following remarks, Applicants respectfully request reconsideration and allowance of all pending claims.

Claim Rejections Under 35 U.S.C. § 101

The Examiner rejected claims 1-2, 4, 8, 11-12, 13-14, 16, 19-20, 22-24, and 27-34 under 35 U.S.C. § 101, alleging that these claims fail to fall within one of the four statutory categories of invention. *See* Office Action, p. 2. Applicants respectfully traverse these rejections.

Legal Precedent

In the recently decided case of *In re Bilski*, No. 2007-1130, (Fed Cir. Oct. 30, 2008) (*en banc*), the Federal Circuit explored the origins of several legal standards previously adopted by the courts in assessing the patentability of methods or processes under Section 101. *See id.* slip op. at 19-20. In its decision, the Federal Circuit set forth that the proper standard for assessing the patentability of *process or method* claims under Section 101 is to determine whether the claimed process is “tied to a particular machine” or if the claimed process “transforms an article.” *Id.* at 24 (citing *Gottschalk v. Benson*, 409 U.S. 63 (1972)). In view of this holding, the Federal Circuit also reiterated the guidelines for properly applying the “machine-or-transformation” test in evaluating the patentability of process or method claims, stating specifically:

The machine-or-transformation test is a *two-branched* inquiry; an applicant may show that a process claim satisfied § 101 either by showing that his claim is tied to a

particular machine, or by showing that his claim transforms an article. See *Benson*, 409 U.S. at 70. Certain considerations are applicable to analysis under either branch. First, as illustrated by *Benson* and discussed below, the use of a specific machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility. See *Benson*, 409, U.S. at 71-72. Second, the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity. See *Flook*, 437 U.S. at 590.

Id. at 24. (Emphasis added.)

In other words, the *Bilski* court has made it clear that if a claim directed to a *method or a process* is either tied to a machine or device, or performs a transformation of an article into a different state or thing, then the claimed *method or process* qualifies as statutory subject matter under Section 101.

Independent Claims 1 and 8

In view of the *Bilski* holding discussed above, Applicants have amended independent claims 1 and 8, each of which are generally directed towards image processing methods. Specifically, Applicants have amended these claims in order to more clearly tie the recited steps to a machine. For example, Applicants note that independent claim 1, as amended, recites “accessing stored image data from a memory,” “determining a pixel sampling rate for the image data using an image processing circuit,” “determining a desired sampling rate using the image processing circuit,” “comparing the pixel sampling rate to the desired sampling rate using the image processing circuit,” and “using the image processing circuit to process the image data by shrinking the input image.” (Emphasis added.) Similarly, independent claim 8, as amended, recites “accessing stored image data from a memory,” “using an image processing circuit to determine a second pixel sampling rate,” “calculating a shrink parameter ... using the image processing circuit,” and “using the image processing circuit to shrink the input image based at least partially on the shrink parameter.” (Emphasis added.)

Applicants respectfully submit that the recited image processing circuit clearly qualifies as a machine to which the claim processes of claims 1 and 8 are tied. For instance, as discussed above, the machine-or-transformation test set forth in *Bilski* requires that the machine or machines to which a claimed process is tied imposes a meaningful limit on the scope of the claim. *See Benson*, 409 U.S. at 71-72. Further, the use of the machine or machines must constitute more than an insignificant extra-solution activity. *See id.* (quoting *Flook*, 437 U.S. at 590). With these points in mind, Applicants submit that the methods recited by independent claims 1 and 8 rely on the very nature in which imaging parameters (e.g., sampling rates, shrink parameters, etc.) are determined using an image processing circuit. For example, the pixel sampling rates and shrink parameters determined by the methods set forth in claims 1 and 8 are determined using the image processing circuit to conditionally generate a shrunken image without loss of image data. Further, as set forth in Applicants' specification, the image processing circuit may include circuitry, including application-specific microprocessors, analog circuitry, digital circuitry. *See e.g.*, Application, p. 4, ll. 19-23; Fig. 1 (image processing circuit 24). Thus, Applicants submit that an image processing circuit is a machine or device that clearly imposes meaningful limits and is significantly tied to the achievement of a particular result from the processes (here, the shrinking of an image) recited by independent claims 1 and 8.

For at least the above reasons, Applicants respectfully assert that independent claims 1 and 8 satisfy the "tied to a machine" prong of the machine-or-transformation test set forth in *Bilski* and, therefore, clearly qualifies as statutory subject matter under Section 101. Accordingly, Applicants respectfully request withdrawal of the Section 101 rejection and allowance of independent claims 1 and 8, as well as those claims depending therefrom.

Independent Claims 16, 23, and 24

With regard to the Section 101 rejection of independent claims 16, 23, and 24, Applicants note that each of these independent claims are directed toward systems for processing image data. For example, independent claim 16 recites a system that comprises a memory circuit for storing image data, as well as an image processing circuit for accessing image data stored by the memory circuit and processing the accessed image data to generate a processed shrunken image. Further, independent claims 23 and 24 are also directed toward image processing systems and are written in means-plus-function language, as permitted by 35 U.S.C. § 112, sixth paragraph. Accordingly, each of the elements recited by claims 23 and 24 should be interpreted in accordance with this body of law. As will be appreciated, with respect to 35 U.S.C. § 112, sixth paragraph, an Examiner “may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination.” *In re Donaldson Co.*, 29 U.S.P.Q.2d 1845 (Fed. Cir. 1994) (emphasis added); *see also* M.P.E.P. § 2181. Instead, the proper construction of these claims requires an analysis of the structure, such as the circuit components and their respective arrangements, disclosed by Applicant in the specification for performing the various recited functions.

With the foregoing in mind, Applicants submit that the recited “means” for performing the various image processing actions recited by the system of independent claims 23 and 24 would correspond at least to the recited memory circuit and image processing circuit discussed above. Therefore, Applicants respectfully assert that independent claims 16, 23, and 24 are *clearly* directed toward tangible image processing systems, and not a method or a process, as apparently alleged by the Examiner. *See* Office Action, pp. 2-3. Consequently, Applicants submit that independent claims 16, 23, and 24 constitute statutory subject matter under Section 101. Accordingly, Applicants respectfully request withdrawal of the Section 101 rejections and allowance of independent claims 16, 23, and 24, as well as those claims depending therefrom.

Claim Rejections under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 1, 2, 4, 8, 13-14, 16, 22-30, 32, and 34 under 35 U.S.C. § 103(a) as being unpatentable over Rosenfeld, U.S. Patent No. 6,748,098 (hereinafter “the Rosenfeld reference”) in view of Platt et al., U.S. Patent No. 6,973,210 (hereinafter “the Platt et al. reference”). The Examiner also rejected claims 11-12, 19-20, 31, and 33 under 35 U.S.C. § 103(a) as being unpatentable over the Rosenfeld reference in view of the Platt et al. reference, and further in view of Blumberg, U.S. Patent No. 6,886,034 (hereinafter “the Blumberg reference.”). Applicants respectfully traverse these rejections.

Legal Precedent

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (PTO Bd. App. 1979). Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent some teaching or suggestion supporting the combination. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Accordingly, to establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). When prior art references require a selected combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself, i.e., something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988). One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

Independent Claims 1, 23, and 25

Independent claim 1, as amended, recites a method comprising, *inter alia*, “determining a desired sampling rate … based at least partially on a point-spread function of the imaging system or the frequency content of the image data.” (Emphasis added.) This feature is also recited in amended independent claims 23 and 25, which are generally directed towards a system and a computer readable medium comprising encoded routines for performing the method recited by claim 1, respectively. After careful review, Applicants do not believe the references cited by the Examiner, either alone or in combination, disclose this particular recited feature.

In the present Office Action, the Examiner cited the Rosenfeld reference as allegedly disclosing the above-recited feature. Specifically, the Examiner cited the following portion of the Rosenfeld reference:

Alternatively or additionally, the statistical information pertaining to the noise component is determined according to the sampling rate of the sampled data, preferably by comparing the sampling rate to the Nyquist rate, as is known in the art and described, for example, in Example 3.13 of the above mentioned book “Fundamentals of Statistical Processing: Estimation Theory”. Further alternatively or additionally, the statistical information pertaining to the noise component is calculated based on attributes of the acquisition system.

Rosenfeld, col. 31, lines 28-37.

Based on this teaching alone, however, Applicants are unable to ascertain how the Rosenfeld reference purportedly discloses that a desired sampling rate is determined using either a point-spread function of an imaging system or the frequency content of an image. To the contrary, the above-cited passage appears to merely state that a noise component in a set of statistical data may be determined by comparing the data sampling rate to the Nyquist rate, which the Examiner asserted as the recited “desired sampling

rate” of independent claim 1. However, there does not appear to be any teaching in the cited passage or elsewhere in the Rosenfeld reference that appears to disclose that the Nyquist rate is determined using either a point-spread function of an imaging system or the frequency content of image data.

Applicants further note that the Rosenfeld reference, in the above-cited passage, appears to allude to a secondary source entitled: “The Fundamentals of Statistical Processing: Estimation Theory” (hereinafter the “Estimation Theory reference”). However, the exact portions (“Example 3.13”) of the Estimation Theory reference that are alluded to in the above-cited passage are not specifically reproduced in the text of the Rosenfeld reference, nor has the Examiner formally cited the Estimation Theory reference as being prior art of record. Therefore, if the Examiner believes that the Estimation Theory reference *does* somehow disclose the above-recited subject matter, Applicants respectfully request that the Examiner provide Applicants a copy of at least the *relevant portions* of the Estimation Theory reference in a future *non-final* Office Action so that Applicants may have a fair opportunity to review the Estimation Theory reference and respond.

However, pending such actions by the Examiner, Applicants respectfully submit that the Rosenfeld reference, on its face, does not appear to teach or suggest that a desired sampling rate is determined based at least partially on the point-spread function of an imaging system or the frequency content of the image data, as recited by independent claims 1, 23, and 25. Further, Applicants do not believe the Platt et al. reference, which was cited in combination with the Rosenfeld reference, obviates these deficiencies, nor has the Examiner indicated that the Platt et al. reference was relied upon in this regard. For at least these reasons, Applicants respectfully request that the Examiner withdraw the Section 103 rejection of independent claims 1, 23, and 25 and allow these claims, as well as those claims depending therefrom.

Independent Claims 8, 16, 24, and 26

In the present Office Action, the Examiner cited the Rosenfeld reference in combination with the Platt et al. reference in rejecting each of independent claims 8, 16, 24, and 26. While Applicants do not necessarily agree that the cited references render these claims obvious, Applicants have chosen to amend each of independent claims 8, 16, 24, and 26, in order to further clarify certain aspects of the recited subject matter. For instance, independent claim 8, as amended, recites a method comprising, *inter alia*, “determining a point-spread function of an imaging system” and “using an image processing circuit to determine a second pixel sampling rate for the image data based at least partially on a modulation transfer function employing a magnitude of a frequency response of the point-spread function.” (Emphasis added.) Applicants respectfully submit that these recited features are fully support by the specification. *See, e.g.*, Application, p. 10, ll. 1-12. Further, independent claims 16 and 24, as amended, recite similar subject matter and are generally directed towards image processing systems adapted to perform the method recited by amended independent claim 8. Independent claim 26, as amended, also recites similar subject matter and is directed towards a computer program stored on a computer readable medium having encoded routines for carrying out the method recited by amended independent claim 8.

Applicants respectfully submit that the Rosenfeld and Platt et al. references do not appear to teach or suggest the above-recited features of independent claims 8, 16, 24, and 26. For example, as discussed above with regard to the rejection of independent claims 1, 23, and 25, neither of the Rosenfeld or the Platt et al. references appears to disclose that a desired sampling rate is determined in any way based upon the point-spread function of an imaging system. As such, Applicants do not believe that the Rosenfeld or Platt et al. references could reasonably be construed as disclosing that a pixel sampling rate is determined based on a modulation transfer function that employs a magnitude of frequency response of a point-spread function, as generally recited by amended independent claims 8, 16, 24, and 26.

In view of this deficiency, among others, Applicants believe that independent claims 8, 16, 24, and 26, as amended, are allowable over the Rosenfeld and Platt et al. references. As such, Applicants respectfully request that the Examiner withdraw the Section 103 rejection of independent claims 8, 16, 24, and 26 and allow these claims, as well as those claims depending therefrom.

Rejection of Dependent Claims 11-12, 19-20, 31, and 33

Claims 11-12, 19-20, 31, and 33 depend from either claims 8 or 16, and were rejected by the Examiner based upon the combination of the Rosenfeld and Platt et al. references, as discussed above, and further in view of the Blumberg reference. In view of the above discussion, however, Applicants submit that the Rosenfeld and Platt et al. references fail to disclose each and every recited feature of claims 8 or 16. Particularly, these references do not appear to disclose that a desired pixel sampling rate is determined based at least partially upon a modulation transfer function employing a magnitude of a frequency response of a point-spread function of an imaging system. The Blumberg reference, which was additionally cited by the Examiner in the rejection of claims 11-12, 19-20, 31, and 33, does not appear to obviate this deficiency, nor did the Examiner indicate that the Blumberg reference was relied upon in this regard. Therefore, claims 11-12, 19-20, 31, and 33 are believed to be clearly patentable at least by virtue of their respective dependencies from either claims 8 or 16. As such, Applicants respectfully request that the Examiner withdraw the Section 103 rejection of claims 11-12, 19-20, 31, and 33.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully submit that all pending claims are now in condition for allowance. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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/Lee Eubanks/

L. Lee Eubanks IV
Reg. No. 58,785
FLETCHER YODER
7915 FM 1960 West, Suite 330
Houston, TX 77070
(281) 970-4545